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(54) PERSONAL COMPUTER WITH SPEED CALL FACILITY

(57) A personal computer operates a speed call application program in the background which permanently displays speed call button icons in the foreground on the computer display. When one of the icon buttons is invoked, e.g. by pointing and clicking to it, the speed call application program accesses a database, retrieves a called party identification number, which can be the called party directory number, begins operation of a call processing program, and passes the retrieved number to the call processing program. The call processing program then controls the dialing of an outgoing call from a telephone or the equivalent associated with the user.

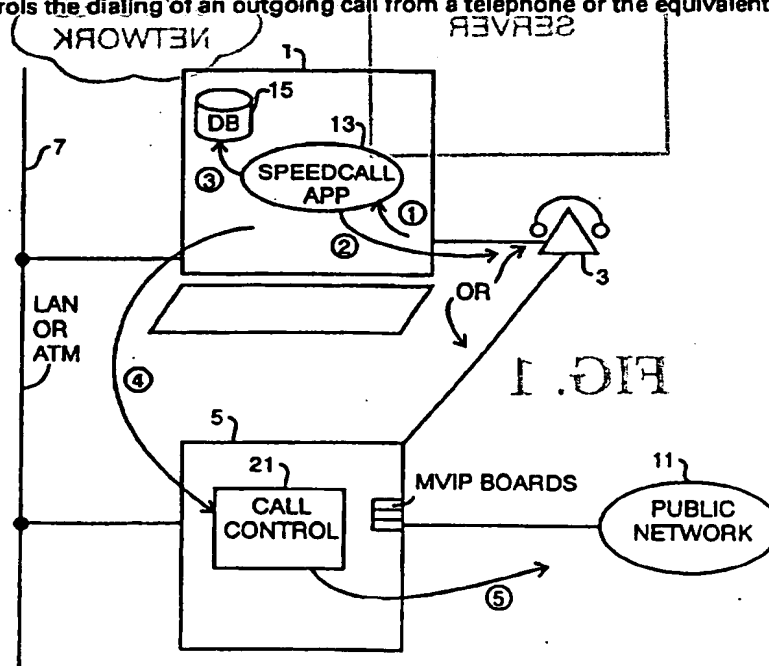


FIG. 3

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This is a reprint to rectify errors introduced in the course of reproduction-Correct Drawings Printed-21.09.1999

(27) A personal computer operates a speed call identification program in the background of the computer display. When one of the icon buttons is invoked, e.g. by pointing and clicking to it, the speed call application program accesses a database, retrieves a called party identification number which can be the called party direct number, and begins operation of a call processing program and carries out the call processing program. The call processing program is designed to receive information from a telephone or the public switched network.

(24) PERSONAL COMPUTER WITH SPEED CALL FACILITY

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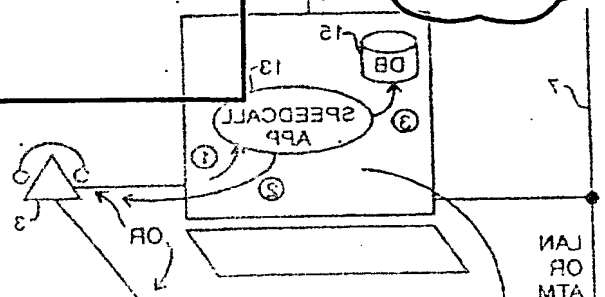
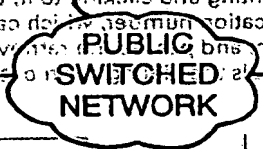
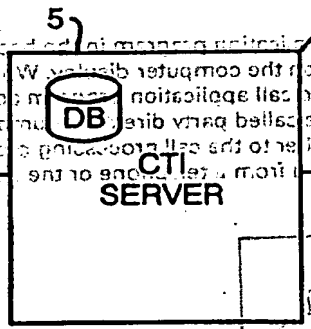
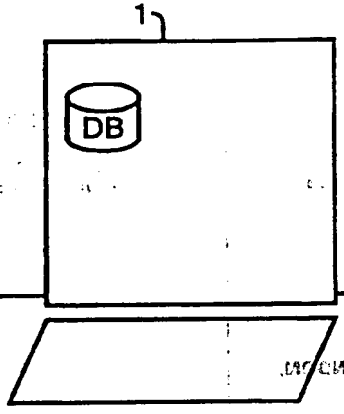


FIG. 1

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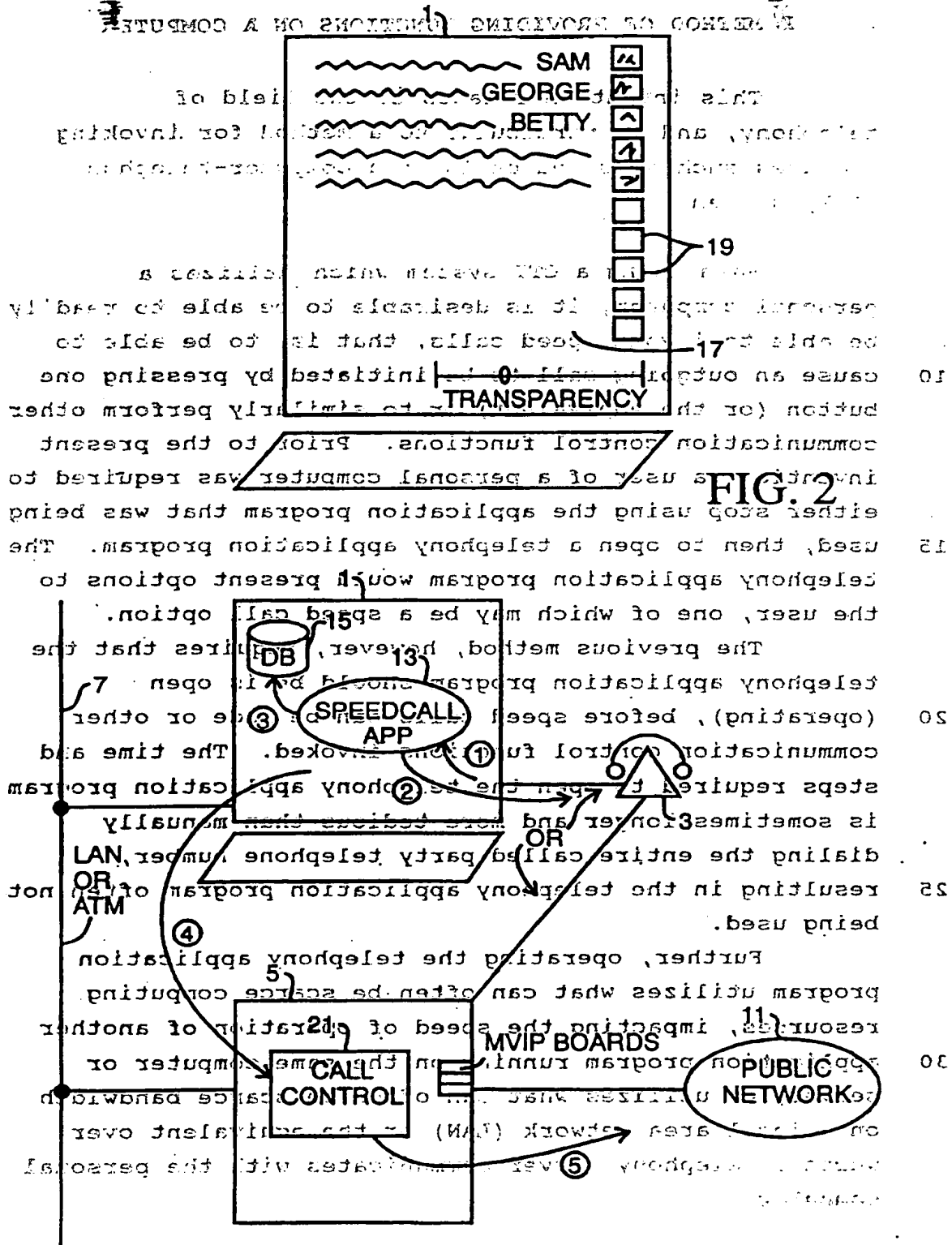


FIG. 3

METHOD OF PROVIDING FUNCTIONS ON A COMPUTER

This invention relates to the field of telephony, and in particular to a method for invoking features such as speed calls in a computer-telephony (CTI) system.

When using a CTI system which utilizes a personal computer, it is desirable to be able to readily be able to invoke speed calls, that is, to be able to cause an outgoing call to be initiated by pressing one button (or the equivalent) or to similarly perform other communication control functions. Prior to the present invention, a user of a personal computer was required to either stop using the application program that was being used, then to open a telephony application program. The telephony application program would present options to the user, one of which may be a speed call option.

The previous method, however, requires that the telephony application program should be is open (operating), before speed calls can be made or other communication control functions invoked. The time and steps required to open the telephony application program is sometimes longer and more tedious than manually dialing the entire called party telephone number, resulting in the telephony application program often not being used.

Further, operating the telephony application program utilizes what can often be scarce computing resources, impacting the speed of operation of another application program running on the same computer or server, or utilizes what can often be scarce bandwidth on a local area network (LAN) or the equivalent over which a telephony server communicates with the personal computer.

In an illustrative embodiment of the present

invention, the personal computer operates a speed call application program in the background which permanently displays speed call button icons, feature access codes or feature activation status keys in the foreground on the computer display. When one of the icon buttons is invoked, e.g. by pointing and clicking to it, using a voice command or otherwise selecting it, the speed call application program accesses a database, retrieves a called party identification number, which can be the called party directory number, begins operation of a call processing program and passes the retrieved number to the call processing program. The call processing program then controls the dialing of an outgoing call from a telephone or the equivalent associated with the user.

The computer or server which can control the outgoing call thus does not need to continuously operate the call processing program. Yet the permanent display of the speed call icons in the foreground over a display of files or any other application program information, graphics, etc., provides immediate and constant access of a user to the speed call functionality of a CTI system.

The embodiment further distinguishes further from other previous programs which provide "soft keys" on a personal computer screen, since the soft keys could only be seen when the application program itself is operated. Operation of a different application program has caused the soft keys associated with the first to disappear from the display.

Memory resident programs such as clocks, calculators, etc., typically disappear from the computer screen (i.e. are placed in background), upon invoking

another application program. Further, such programs are self-contained, and do not invoke and pass data to another application program such as a telephone call completion program.

5 In one illustrative embodiment of the present invention, a method of providing telephone call functions on a computer includes operating in an application program in background which permanently displays speedcall button icons in foreground on a computer display screen, selecting one of the icons, and operating a telephone application program for controlling an outgoing call from a telephone associated with the computer, using a called party identification number associated with the one of the icons.

15 A better understanding of the invention will be obtained by reading the following description, with reference to the accompanying drawings, in which:

Figure 1 is a block diagram of system on which an embodiment illustrative of the present invention may be operated,

Figure 2 illustrates a personal computer screen for use in operating an embodiment illustrative of the present invention, and

25 Figure 3 illustrates the operation of a system such as that shown in the block diagram of Figure 1.

Figure 1 illustrates in block diagram a system on which an embodiment illustrative of the present invention can be implemented, as described in detail in U.S. patent application S.N. 339463 filed November 14, 1994,

30 published under No. 5,657,446, entitled Local Area Communications Server System, and invented by Deborah Pinard et al, which is incorporated herein by reference. However, in summary, a personal computer 1 is associated with a telephone or other station apparatus (herein referred to in general as a telephone 3). The personal

computer is in communication with a CTI server 5 via a LAN 7 or asynchronous transfer mode link. A memory storing a database (which will be referred to in general as a database 9) is connected to the LAN. The telephone 3 is connected either to the server 5 or to the personal computer 1, and the server 5 is connected to a switched network such as a public switched network 11.

In operation of the above, in order to make an outgoing call over telephone 3, a user invokes operation of a CTI program on the personal computer 1, which is stored in the server 5, but which could be stored in a memory of the personal computer 1. As a result, the server communicates with the personal computer over the LAN 7, causing the personal computer to display telephony functions, such as a dialog box requesting a series of digits to be dialed to be manually entered, or displaying a group of speed call button icons. The telephony display appears in the foreground over the display of another application program that may have been previously in use. Once the dialed number has been entered, or a speed dial icon selected, the application program proceeds to dial and control the outgoing call. When the user wishes to use the previous or another application program, once invoked it appears in the foreground on the computer screen.

With reference to Figures 2 and 3, a speedcall application program is stored in a memory of the personal computer 1. A database 15 of called line identification numbers, such as directory numbers, is stored in a memory of personal computer. The speedcall application program 13 causes display on the computer screen 17 a group of icons 19, such as buttons, each of which is associated with one called line identification. Each button can be labeled

with the name of a called party or some other identification.

The speedcall application program, operated in an initialization mode, preferably presents dialog boxes to the user on the computer screen which requests an identification of the called party to be displayed, and an associated directory number to be dialed. It then stores this data in the database 15. The speedcall application program creates an icon 19 with an identification of the called party, and displays it on the computer screen. For example, this could be an artificial intelligence code which keeps track of most dialed numbers and presents an enquiry to the user if each of those numbers should be added as speed call numbers. The identification of the called party need not be restricted to text or a number, but can constitute the form of the icon, e.g. the icon can be an identifying graphic, such as a logo of a company or institution, it can be a picture of the face of a called party, etc.

It is an important feature of the arrangement described that the speedcall application program should always be operating, and should always display the speedcall icons on the computer screen, in the foreground, no matter what may be the background, e.g. a file of some other application program, a desktop, etc. Thus whatever function is performed on the computer, the speedcall buttons are always displayed.

In operation, no matter what application program is currently running on the personal computer, when the user wishes to make a speed call, he or she selects the desired speedcall icon 19. The speedcall application program 13 then looks up in the database 15 the identification of the called party, e.g. the directory number corresponding to the selected icon.

The speedcall application program then invokes a call processing program 21 in the server, and passes the identification number retrieved from the database to the call processing program. The call processing program 21 then places an offhook condition on telephone 3, and dials the called number via the public switched network 11, controlling the completion of the call from the public switched network to the telephone 3.

It will be noted that the system operates only the speedcall application program prior to making the call, which typically is a much smaller program than a full CTI application program necessary in the prior art. In addition, the speedcall icons are always available for use by the user, no matter what application program is in use on the computer.

It will be recognized that other systems may be used than the system as shown in Figures 1 and 3. The computer 1 can contain a call processing circuit, to which telephone 3 and the public switched network is connected. The server 5 and LAN 7 in this case are deleted. In this case, or a case in which the computer has a telephony circuit which interfaces a server, the telephone 3 can be connected to the computer, rather than to the server, and the offhook status can be enabled by the telephony circuit in the personal computer. Indeed, other platforms can be used than the above described CTI hardware platforms, using the principles described herein.

It should be recognized that operation of the system described is not limited to speedcall icons all of which are associated with a single called line. For example, a speedcall icon can be a "last number redial" icon, which, when invoked, causes the speedcall application program to provide the last called party number identification to the call processing program. The call

processing program then uses this instead of a number retrieved from the database to process the outgoing call.

- Alternatively, the last number dialed can be
- 5 stored in association with an identification of the calling line in the server or computer operating the call processing. Selecting the last number dialed icon on the computer screen causes the speedcall application program to send a message to the call processing program
- 10 to use that stored last number dialed, and redial it, in a new call from telephone 3.

Other CTI icons could also be located permanently in foreground on the computer screen, such as electronic mail control, feature invocation, etc.

- 15 It is also preferred that the speedcall application program should provide to the user the ability to control the degree of invisibility of the speedcall icons 19. Thus the user can choose to make them totally invisible, transparent to any degree
- 20 whereby the test, graphics, etc. of another application program that the icons are in the foreground over, are visible through the icons. The icons could also be made opaque.

- It should be noted that the icons can be
- 25 selected by any known means, such as pointing and clicking a cursor, voice activating them, by touch screen, etc. Voice activation is particularly useful in the event the icons are highly transparent (or invisible, although still in the foreground). This can
- 30 be implemented by incorporating a language (word corresponding to each icon) detection circuit in the computer, which is connected to a microphone, the output of the voice detection circuit being provided to the speed dial application program.

Tools for creating the display, the icons, for
invoking the icons as active, and for enabling resulting
operation of the application programs are well known to
persons skilled in the art. For example, in the event
5 that the computer used is the Apple Macintosh, a tool
that can be used is Hypercard, as described in the text
"The Complete Hypercard Handbook", by Danny Goodman,
copyright 1987, published by Bantam Books Inc. In the
event that the computer is an IBM compatible personal
10 computer using a Windows 3.1 operating system, a tool
that can be used is the programming techniques described
in the text "Programming Windows 3.1", by Charles
Petzold, copyright 1992, published by Microsoft Press.
A person understanding this invention may now
15 conceive of alternative structures and embodiments or
variations of the above. All of those which fall within
the scope of the claims appended hereto are considered
to be part of the present invention.

A method as defined in claim 1 in which the
application program is comprised of a
graphical application program and a call processing
program, operating the graphical application program to
perform the looking up step, passing said stored
identification number to the call processing program,
and receiving the call from the call
processing program.

A method as defined in claim 2, including
the step of receiving a call from a telephone
number and passing the call to the call processing
program.

CLAIMS

1. A method of providing telephone call functions on a computer comprising:

- (a) operating an application program in background which permanently displays speedcall button icons in foreground on a computer display screen,
- (b) selecting one of said icons,
- (c) operating a telephone application program for controlling an outgoing call from a telephone associated with the computer, using a called party identification number associated with said one of said icons.

2. A method as defined in claim 1 comprising storing speedcall party identification numbers in a database, associating each stored identification number with one of the icons, looking up an associated identification number in the database upon enabling of one of said icons, and providing an identification number stored in the database associated with the invoked icon to the telephone application program.

3. A method as defined in claim 2 in which the telephone application program is comprised of a speedcall application program and a call processing program, operating the speedcall application program to perform the looking up step, passing said stored identification number to the call processing program, and controlling the outgoing call from the call processing program.

4. A method as defined in claim 2, including storing the speedcall application program in a memory of the computer, and storing the call processing program in

a telephone call server which is in communication with
5 the computer and with an external switched network.

5. A method as defined in claim 4 including
controlling the outgoing call from a telephone connected
to the server.

6. A method as defined in claim 4 including
controlling the outgoing call from a telephone connected
to the computer.

7. A method as defined in claim 2, including
storing both the speedcall and call processing program
in at least one memory of the computer and controlling
the outgoing call from a telephone connected to the
5 computer.

8. A method as defined in claim 1 including
operating an application program in background which
displays communication control icons in foreground on
said computer display screen.
5 9. A method as defined in claim 1 including
operating an application program in background which
displays communication control icons transparently on
said computer display screen.

10. A method of providing telephone call
functions on a computer comprising:
(a) operating an application program in
background which permanently displays speedcall button
5 icons transparently in foreground on a computer display
screen,
(b) selecting one of said icons,

(c) operating a telephone application program for controlling an outgoing call from a telephone associated with the computer, using a called party identification number associated with said one of said icons.

11. A method as defined in claim 10 including operating an application program in background which displays communication control icons in foreground on said computer display screen.

12. A method as defined in claim 11 in which the display of said icons is a permanent display in foreground over a display resulting from any other application program operated by the computer.

13. A method as defined in claim 8 in which the display of said icons is a permanent display in foreground over a display resulting from any other application program operated by the computer.

14. A method as claimed in claim 1 including an arrangement substantially as described herein with reference to any one of the Figures of the accompanying drawings.

15. A method as claimed in claim 1 including an arrangement substantially as described herein with reference to any one of the Figures of the accompanying drawings.

16. A method as claimed in claim 1 including an arrangement substantially as described herein with reference to any one of the Figures of the accompanying drawings.

17. A method as claimed in claim 1 including an arrangement substantially as described herein with reference to any one of the Figures of the accompanying drawings.

18. A method as claimed in claim 1 including an arrangement substantially as described herein with reference to any one of the Figures of the accompanying drawings.

19. A method as claimed in claim 1 including an arrangement substantially as described herein with reference to any one of the Figures of the accompanying drawings.